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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10 081,699	02 22 2002	Mitsutoshi Nakamura	15162-04300	1268

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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 04/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/081,699

Applicant(s)

NAKAMURA, MITSUTOSHI

Examiner

Jeanne A. Di Grazio

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 6) ☐ Other

DETAILED ACTION

Preliminary Amendment

1. Preliminary Amendment filed April 8, 2002 is noted.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamaoki et al. (US '431) in view of Sugimoto et al. (US '759 B1).

Per claims 1, 10, and 11: Tamaoki has a rewritable color image recording medium and method with a cholesteric liquid crystal layer. Tamaoki has a heating process whereby the liquid crystal is heated to a temperature allowing the liquid crystal to exhibit a cholesteric (crystal) phase such that an image is formed (Col. 3, Lines 24-56). Tamaoki discloses an isotropic phase (non-cholesteric) that is transparent or colorless (Col. 3, Lines 24-27). Tamaoki does not appear to disclose that the isotropic (fixed) phase may be a phase whereby a latent image is formed; however, Sugimoto teaches that when a medium weight cholesteric liquid crystal compound is heated to assume an isotropic or cholesteric phase then rapidly cooled, either the isotropic phase or cholesteric phase is changed into a glassy solid phase that shows iridescent colors by selective reflection (Col. 8, Lines 4-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamaoki in view of the teachings of Sugimoto for a heating process that allows the liquid crystal to exhibit either a cholesteric or isotropic phase to

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form an image of iridescent or multi colors for the purpose of forming a visible or latent color image. Tamaoki does not appear to have a second heating process for heating a selective area of the recording medium where the image has been formed to discolor or develop a color; however, Sugimoto has a heating process for the purpose of erasing / releasing the recorded state where selective portions containing images may be heated by an appropriate heat source and then cooled (Col. 13, Lines 47-67 and Col. 14, Lines 1-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamaoki in view of Sugimoto for efficiency, that is, to have a heating means that can both record and erase images by an adjustment in temperatures for the purpose of carrying out over-writing.

Per claims 2 and 3: The process of forming a visible and latent image with respect to the first heating process has been addressed in claim 1 above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamaoki in view of the teachings of Sugimoto for a heating process that allows the liquid crystal to exhibit either a cholesteric or isotropic phase to form an image of iridescent or multi colors for the purpose of forming a visible or latent color image.

Per claim 4: Tamaoki has a first heating process in which the recording medium is then rapidly cooled down (Col. 3, Lines 31-32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to rapidly cool the recording medium after heating to fix and record the color image (Id.).

Per claim 5: Concerning the rapid cooling where the liquid crystal exhibits a glass phase, one turns to the teaching in Sugimoto that specifies that upon rapid cooling, the liquid crystal phase is turned into a glassy solid phase (Col. 8, Lines 4-15). It would have been obvious to one

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of ordinary skill in the art at the time the invention was made to modify Tamaoki in view of Sugimoto for selective coloring.

Per claim 6: Tamaoki does not appear to have a first temperature exhibiting a glass phase; however, Sugimoto has a recording medium that operates near a glass transition temperature (Col. 78, Lines 39-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamaoki in view of Sugimoto for a recording medium that can operate under low temperatures (Id.).

Per claims 7 and 12: Tamaoki does not appear to have a second heating process; however, Sugimoto has a second heating process as noted. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamaoki in view of Sugimoto to rapidly cool a second heating process to fix an image.

Per claim 8: Concerning the rapid cooling where the liquid crystal exhibits a glass phase, one turns to the teaching in Sugimoto that specifies that upon rapid cooling, the liquid crystal phase is turned into a glassy solid phase (Col. 8, Lines 4-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamaoki in view of Sugimoto for selective coloring.

Per claim 9: Tamaoki does not appear to have a second heating process where the liquid crystal is heated to a second temperature lower than the first temperature; however, Sugimoto has a decreased energy applied to the recording medium by controlling a voltage and pulse width (Col. 14, Lines 9-17) for the purpose of erasure of recorded information as noted (Id.). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tamaoki in view of Sugimoto for a second temperature lower than the first for

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efficiency, that is, to have a heating means that can both record and erase images by an adjustment in temperatures for the purpose of carrying out over-writing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (703)305-7009. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-8741 for regular communications and (703)746-8741 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Jeanne Andrea Di Grazio

JDG
April 10, 2003

~~Robert Kim, SPE~~

T. Chowdhury
T. Chowdhury
Primary Examiner
Tech. Center 2800